



# *Earned Value*

## **Defense Acquisition Reform and Project Management**

***Wayne Abba***

***Office of the Under Secretary of Defense  
(Acquisition & Technology)***

# DoD Acquisition Reform

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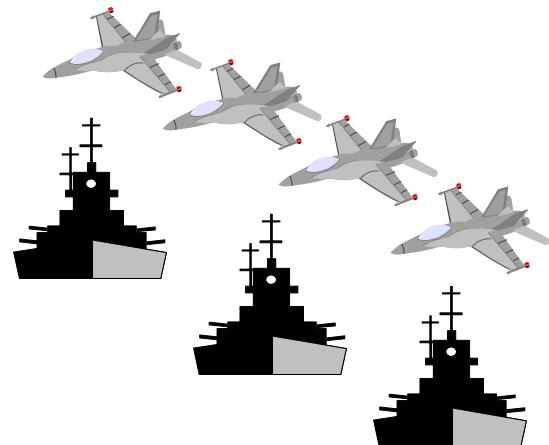
- ◆ The acquisition environment
  - Industrial base consolidation
- ◆ Earned Value “Reengineered”
  - From C/SCSC to Earned Value Management Systems (EVMS) Criteria
- ◆ Integrated Project Management

 **EVM Web Site -**  
**[www.acq.osd.mil/pm](http://www.acq.osd.mil/pm)**

# DoD Acquisition Reform

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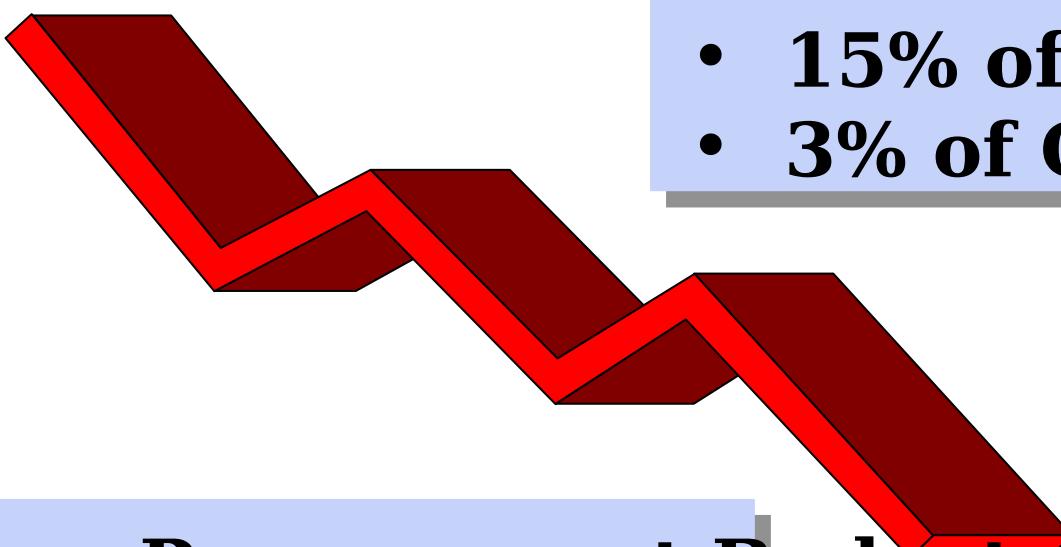
- ◆ **Make DoD the smartest buyer of best goods & services to meet warfighter needs at best value over life of product**
  - New laws and policies
  - Separate mandatory/discretionary practices
  - Simplify acquisition policy documents
  - Integrate policies & procedures for weapon systems and information systems
- ◆ **Shift from “oversight” to “insight”**



**1961 Pentagon Spending:**

- 40% of Federal Budget
- 8% of GDP

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**1997 Pentagon Spending:**

- 15% of Federal Budget
- 3% of GDP

**Military Procurement Budget:**

- Down 67% since 1985 peak
- \$60 Billion goal



# DoD Responses

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- ◆ **Acquisition Reform**
- ◆ **“The Last Supper”**
  - 1993 DepSecDef dinner
  - Fewer, larger companies
- ◆ **Followed previous OSD-led management initiatives**
  - Better integrate cost, schedule, technical perf. using Earned Value
  - Ongoing since 1980s



Lockheed  
GD Mil. Jets  
Sanders Assoc.  
Martin Marietta  
GD Rockets  
GE Aerospace  
Loral  
Unisys Defense  
IBM Fed. Systems  
LTV Missiles  
Ford Aerospace  
Goodyear  
Aerospace  
Northrop  
LTV Aircraft  
Grumman  
Westinghouse Def  
Boeing  
Rockwell Def &  
Space  
McDonnell  
Douglas  
Raytheon  
E-Systems  
Texas Instruments  
Def  
Hughes Aircraft

}

Lockheed

}

Martin Marietta

}

Loral

}

Northrop Grumman

}

}

Boeing

Rockwell Def & Space  
McDonnell Douglas

Raytheon

Texas Instruments Def

Hughes Aircraft

## The 1990's - Shrinking Industrial Base

}

Lockheed  
Martin

Northrop Grumman

Boeing

Raytheon

# Effective Management\*

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**Contract:** 4 miles of railroad track in 4 weeks for \$4 million.

**Status:** After 3 weeks, only \$2 million has been spent.

**Question:** ~~Spent vs. Planned~~ you doing (~~End of Week~~) you know?)

Planned \$1M/week

- Planned \$3M to date

- Actual cost \$2M

- \$1M favorable???

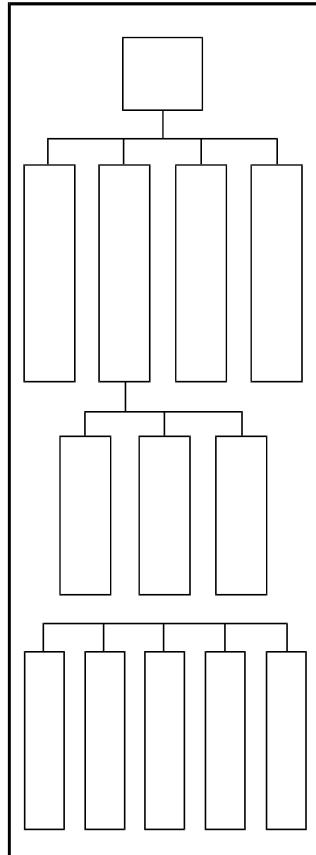
- Planned \$1M/week
- Planned \$3M to date
- *Earned \$1M* (66% behind)
- Actual \$2M (100% overrun)

- EAC \$8M, 8 weeks late

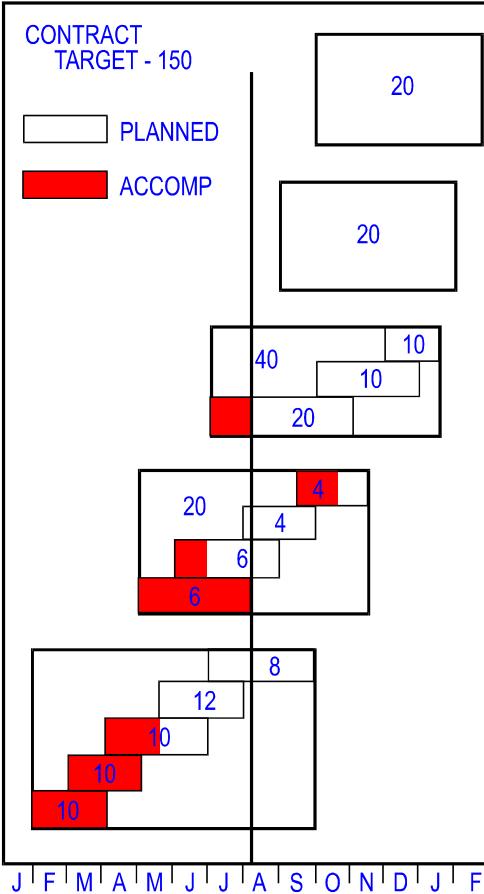
\* Source: May 1997 General Accounting Office Report

# Earned Value Management =

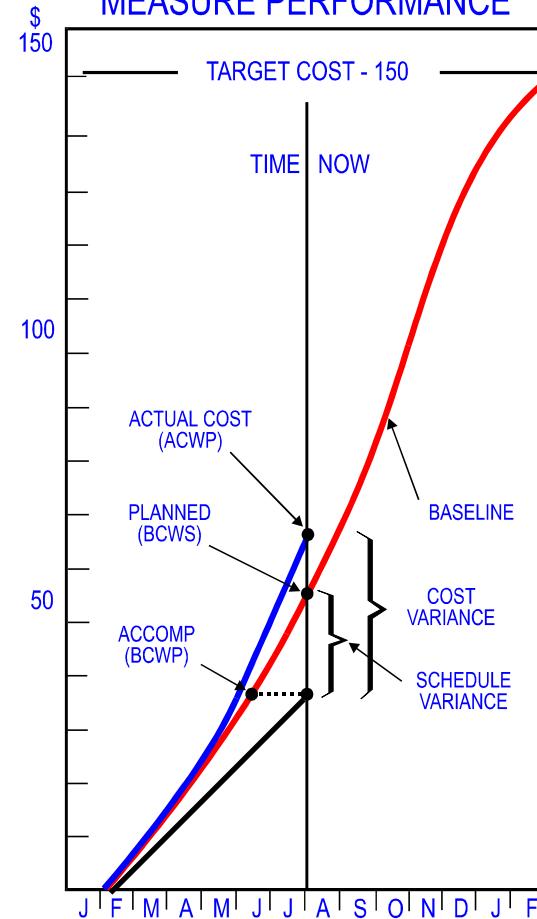
DEFINE THE WORK



SCHEDULE AND BUDGET



MEASURE PERFORMANCE



# Lesson of the A-12 (& others)

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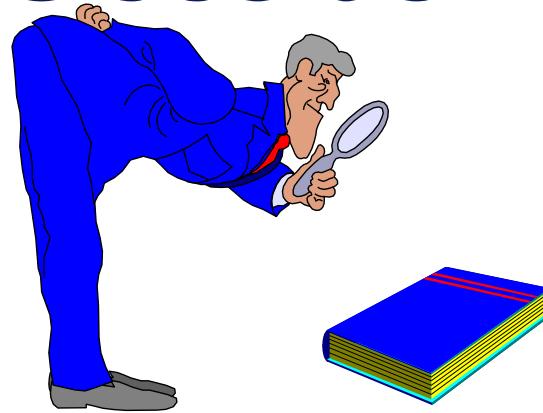
The “Beach” Report, A-12 Administrative Inquiry,  
28 Nov 1990

**Too often, earned value insights  
remain the sole province of the  
supporting program control staff of  
both contractors and the government.**

- Earned value must be an **integral**  
part of the performing design and  
manufacturing organizations
- Only when **program technical staffs**  
are held accountable for earned  
value analysis, will they begin to  
understand its implications

# Reengineering EVMS

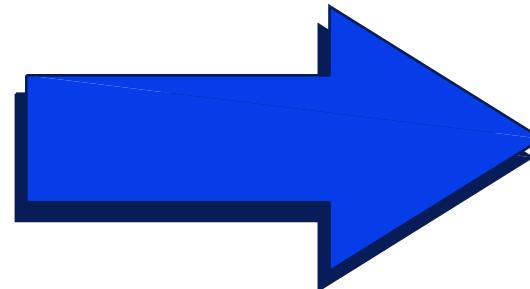
## October 1993 - A Vision



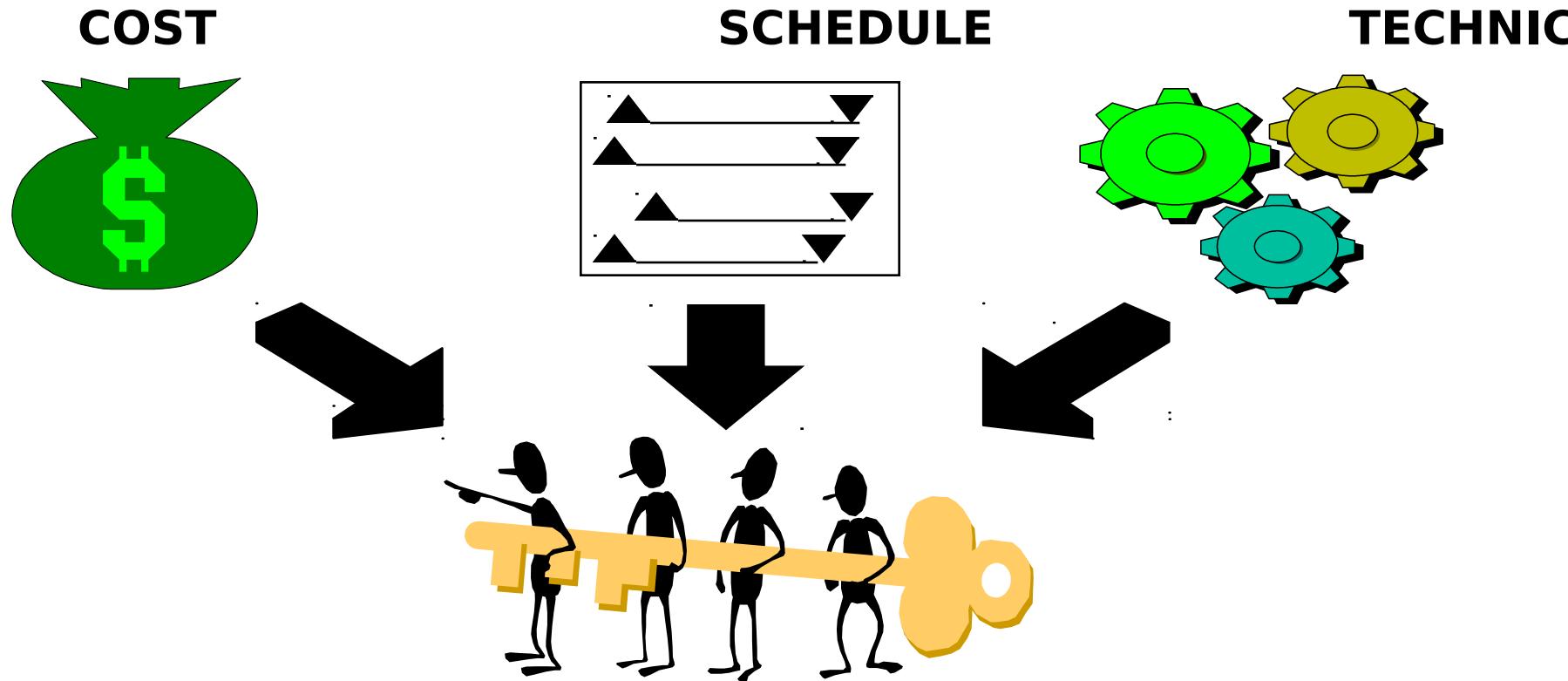
Inspection



Management



# Integrated Product Teams: The Key to Success



**Management systems don't manage - people do!**  
**EVM is used to identify, communicate and *manage***  
**the resource effect of technical and schedule problems**

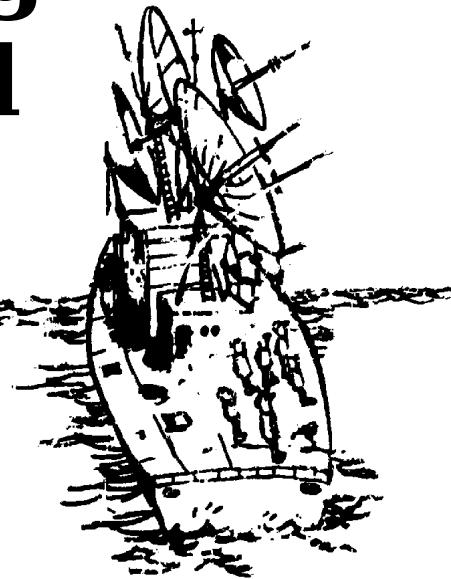
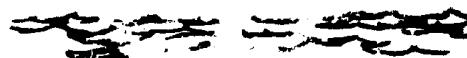
# The Really Nice Thing About

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**Not Planning**

Failure comes as a

complete surprise and is  
not preceded by long  
periods of worry and  
depression!\*



\*Micro Planning International

# Work Breakdown Structure

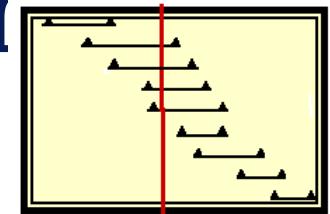
## Structure:

### The Key to Integration

MIL-HDBK-881

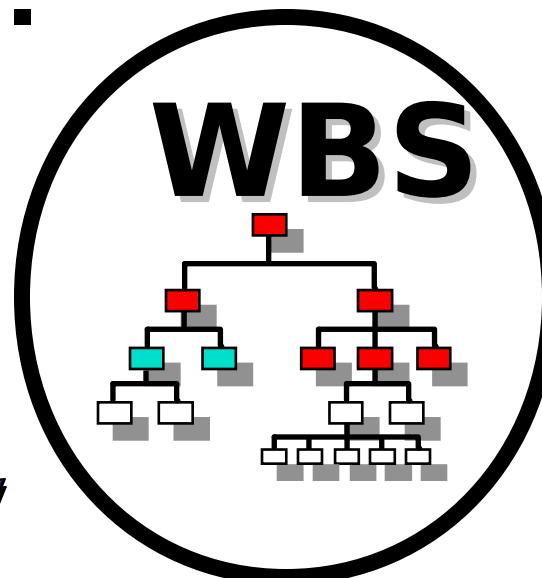
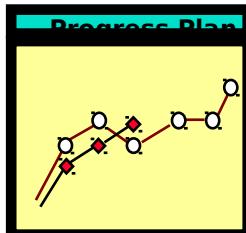


COST

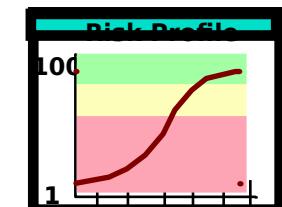


SCHEDULE

TECHNICAL  
PERFORMANCE



RISK



# Reengineering EVM: DoD Improvements

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- ◆ **Redefined Earned Value Ownership**
  - Financial reporting to management
  - Government to industry
  - PMs “assume” data integrity
- ◆ **Better management tools**
- ◆ **Integrated Baseline Reviews**
  - Improved planning process
  - Better technical/risk management
- ◆ **Revised DoD 5000.2-R**
  - Defense Acquisition Deskbook



# Reengineering EVM: Integrated Baseline

## Reviews

- Within 6 months of award
- Mutually understand plan
  - Scope
  - Schedule
  - Resources
- Planning process vs. event
- PM leads
  - EVM staff supports
  - Management system reviews effectively eliminated

Risk



# Growing Consensus: Gov't/Industry Best

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## Practice

- ◆ Dec. '96 DoD accepted industry EVMS guidelines as C/SCSC replacement
- ◆ Reserved right for government review
  - As determined by project manager
  - “Self-certification” not in public interest
- ◆ Encouraged “true” standard
  - ANSI/EIA 748-98 Earned Value Management Systems
  - For now, DoD and industry EVMS criteria are equal
  - International discussions ongoing



Canada, UK

# Keynote Themes

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- ◆ **Industry**
  - EVM does not cost
  - Pays “big time”
  - Improves bottom line
  - Customer satisfaction
  - More bang for buck
- ◆ **Government**
  - Perceptions
  - Martyrs,  
Missionaries,  
Messengers



# Roadmap from Requirements

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## to Challenges:

– Cost-effective government requirements

- International cooperation
- Commercial environment efficiently eliminates non value-added practices.

- ◆ Exam question:
  - Can EVMS respond?

# Industry's Vision

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- ◆ National Defense Industrial Association Management Systems Subcommittee
- ◆ Move the community from a requirements structure to one based on competitive advantage
- ◆ Yogi Berra: “When you arrive at a fork in the road, take it.”

# Roadmap -

## Requirements to

# Competitive Advantage

- Grow business (new contracts)
- Achieve customer expectations (contract performance)
- Achieve stockholder expectations (improve financial results)
- Industry
- Government
- Reduce project costs
- Reduce schedule risk
- Program Success: improve predictability

# Roadmap -

## ~~Requirements to~~

## ~~Competitive Advantage~~

- Common Business Processes give the Program Manager the tools to avoid reinventing the wheel for each program.
- EV is a tool integrating technical, schedule and cost performance measurement and analysis data for management.
- Cost savings and competitive advantage come from a broad business application.

*Program by program application isn't good*

# Roadmap from Requirements to *Government* Competitive Advantage

IBRs  
32 EVMS Criteria

Regulations Revised

Contractor Project  
Management Practices

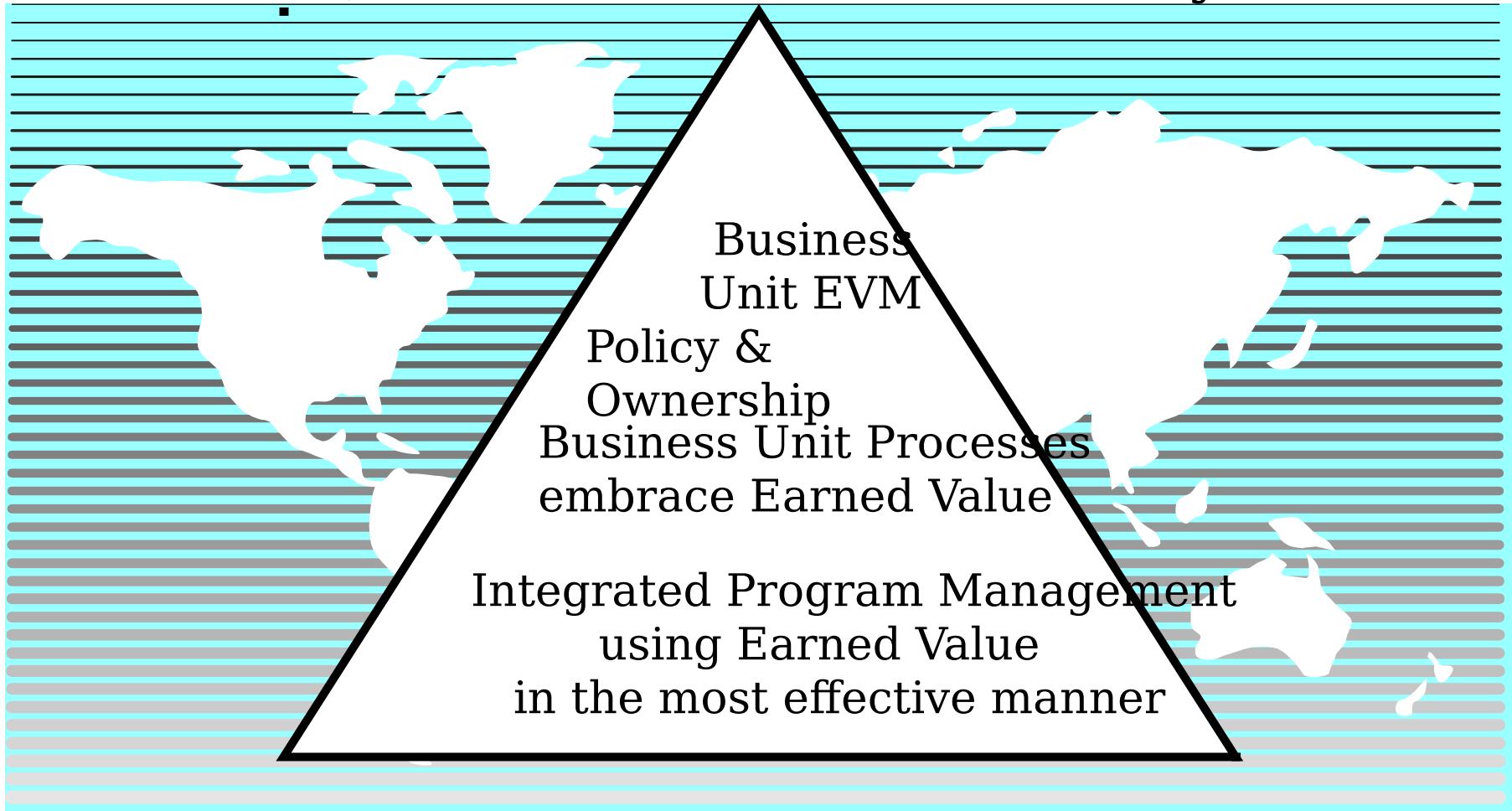
ANSI-EIA 748  
Advance Agreements  
IBRs  
*Industry*

- Incorporate ANSI-EIA 748  
DoD Regulation



- Business Unit Policy & Procurement  
embrace EVMS (Ownership)
- International recognition  
EVMS Guidelines

## Integrated Program Management Competitive (ALL non-value added activity eliminated)



# **Sustaining the Progress**

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- ◆ **Public/Private cooperation**
  - Expand contact with commercial firms
  - Eliminate unessential differences between government and commercial management practices
  - Civil-Military Integration
- ◆ **Global Standards (or guidelines)**
  - Work with industrial partners-
  - While encouraging wider dialogue

# **Sustaining the Progress**

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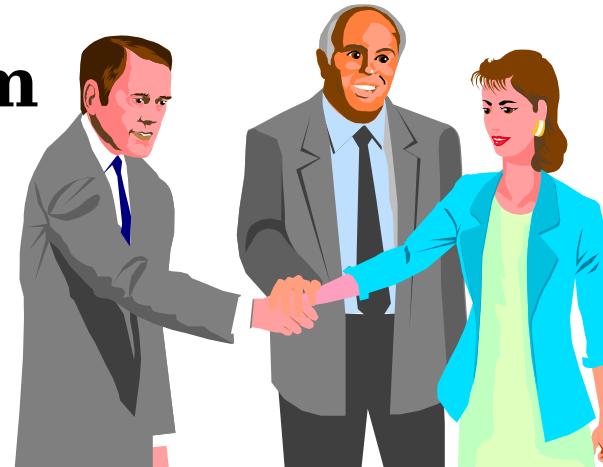
## **(cont'd)**

- ◆ **Project Management Education**
  - Alternative delivery
    - » Distance learning
    - » Alternate sources
- ◆ **Integrated Project Management**
  - Technical Performance Management  
**IPT + IBR + EVM = IPM**
- ◆ **In-house management**
  - November 1998 conference

# Sustaining the Progress (cont'd)

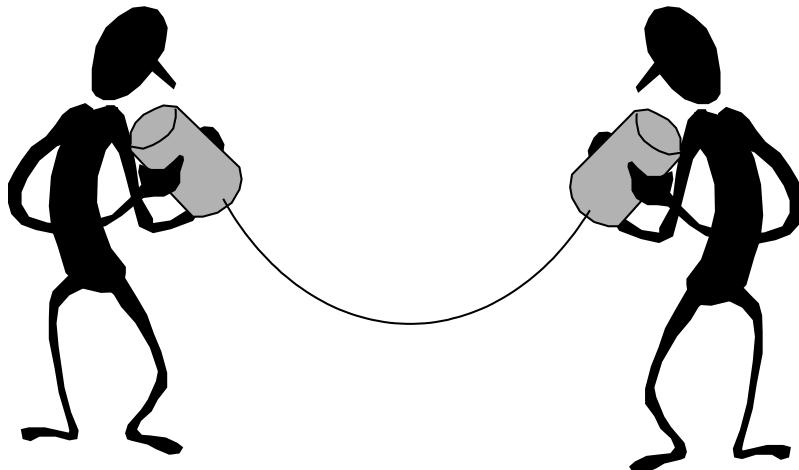
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- ◆ **Interagency cooperation**
  - Office of Management and Budget
  - “One government” approach
- ◆ **Associations are valued partners**
  - American Project Management Forum
  - Global Forum
  - Standards
  - Education
  - PMA/PMI



# Sustaining the Progress (cont'd)

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- ◆ “Clearinghouse”
  - Trust & Communication
  - OSD to DCMC
  - Mr. Richard Zell  
**(703) 767-3469**  
**[richard\\_zell@hq.dla.mil](mailto:richard_zell@hq.dla.mil)**
- ◆ Cloud Kingdom
  - At your service  
**(703) 695-5166**  
**[abbawf@acq.osd.mil](mailto:abbawf@acq.osd.mil)**

# WAR (wInsight Analysis & Review) Room

- ◆ **8 Screens**
  - WBS
  - Product Photo
  - Schedule status
  - Schedule perf. trend
  - Risk + (Monte Carlo)
  - Cost perf. trend
  - Est. at complete
  - Funding status
- ◆ **Compare programs**
  - Update in real time
  - Link performance to budget decisions
- ◆ **Natl. Reconnaissance Office**
  - Near Dulles Airport
  - Visits can be arranged
  - Demo at Tysons conf.



World Class Best Practice in Partnership w

# Using Variance Information

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- ◆ **Schedule Variance**
  - **BCWS tied to early start/finish**
    - » Late with float
    - » “Real” problem
    - » Deliberately delayed
    - » Work done; no BCWP
    - » Early
    - » Anomalies
- ◆ **Cost Variance**
  - **Negative**
  - **Positive**
  - **Anomolies**

# Negotiating Contract Changes

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- ◆ **Value of completed work**
- ◆ **Value of work in process**
- ◆ **Value of work deleted (yet to be done)**
- ◆ **ACWP Cum**
- ◆ **BCWP Cum**
- ◆ **ACWP Cum (+ ETC)**
- ◆ **Baseline Budget**